Loop-W8140
Outdoor 2.4G/5.8G Wireless Bridge

Features

General

- Weatherproof IP67 plastic casing
- Internal RSSI Buzzer
- Single/dual internal or external antenna options
- Long range with high-gain external antenna and mid-gain internal antenna option
- Ideal for point-to-point and point-to-multi-point Line of Sight (LOS) applications
- IEEE802.11a/b/g/n compliant up to 150 Mbps
- Manufacture option:
  - a/b/g/n: 100 mW
  - a: 250 mW / b/g: 500 mW
- Wireless Distribution System (WDS)
- User-selectable mode
  - Non-WDS: Access Point (AP), Client
  - AP Mode: 2.4G or 5.8G
  - WDS: Master Bridge, Slave Bridge, Repeater
- Bandwidth control with QoS, and video, voice and data scheduling
- User-assigned VLAN tags for data and management
- Protocol filtering for internet and intranet networks
- Up to 250 associations and 50 concurrent users
- Wireless isolation between wireless clients
- Web and SNMP management
- Standard
  - Wireless: IEEE802.11a/b/g/n
  - Ethernet: IEEE802.3, 802.3u (CSMA/CD)
- RoHS compliant

IEEE802.11a/b/g

- IEEE802.11a/b/g compliant up to 54 Mbps
- Channel bandwidth adjustable 5/10/20 MHz
- Up to 108 Mbps data rate in Turbo Mode

IEEE802.11a/b/g/n MIMO (manufacture option)

- IEEE 802.11a/b/g/n 2Tx/2Rx compliant up to 300 Mbps(under a/n, g/n, 100 mW mode)

Description

The Loop-W8140 is an outdoor wireless local area networking device for Wireless Local Loops (WLL), a cost-effective solution addressing voice, video and data for home and enterprise access point, router, and gateway applications. It is a perfect solution for point-to-point and point-to-multi-point applications, as well as for E1 solutions.

The W8140 comes in a weatherproof IP67 plastic casing with an internal RSSI buzzer and is designed for use in a number of settings. It is ideal for use in backhaul networks where reliable, long haul wireless communication is critical. Manufacturing options include single or double internal or external antennas. External antennas are sold separately.

W8140 a/b/g

Paired with an external antenna with line of sight, the 250 mW or 500 mW W8140 can be used to establish long distance point to point wireless links.

With the Wireless Distribution System (WDS), the W8140 can be configured by the user as a master bridge, slave bridge, or repeater. As a repeater, it supports one wireless uplink and 20 concurrent wireless downlinks. Without WDS, this device can be configured as an Access Point (AP) or client and can support up to 250 client associations and 50 concurrent users in access point mode.

W8140 a/b/g/n MIMO

The Loop-W8140 a/b/g/n MIMO uses the 2Tx/2Rx MIMO OFDM radio design to offer an outstanding performance with high sensitivity and throughput of up to 300 Mbps. It promises fast and reliable transmission of signals.

Ordering Information

Note: RoHS compliant units are identified by the letter **G** appearing immediately at the end of the ordering code

External antenna models: Antennas must be purchased separately, please refer to Loop's Antenna Brochure for antenna information.

Model	Description	Notes
Loop-W8140-EANT-freq-abg-100-encl-country-**G**	802.11a/b/g **(2.4G or 5.8G Software Selectable)** 100 mW WLAN outdoor device. Standard package includes: mounting bracket, watertight RJ45 connector (without cable). Please order antenna separately.	Where **encl** is defined in the following page You must select a **PoE** adaptor. See the accessory table at page 3 You must fill in the **country** name *where* it will be installed to determine the frequency band You must select **freq** (frequency) as default, see following page
Loop-W8140-EANT-freq-abg-500-encl-country-**G**	802.11a/b/g **(2.4G or 5.8G Software Selectable)** 2.4G supports 500 mW; 5.8G supports 250 mW. WLAN outdoor device. Standard package includes: mounting bracket, watertight RJ45 connector (without cable). Please order antenna separately.	
Loop-W8140-MIMO-EANT-freq-abgn-2X2-100-encl-country-**G**	802.11a/b/g/n **(2.4G or 5.8G Software Selectable)** 100 mW WLAN outdoor device. 2Tx/2Rx. Standard package includes: mounting bracket, watertight RJ45 connector (without cable). Please order antenna separately.	

Internal Antenna Model

Loop-W8140-IANT-2412-2462-bg-100-encl-country-**G**	802.11b/g **(2.4G)** 100 mW WLAN outdoor device. 2.4G Internal Antenna: 13dBi Standard package includes: mounting bracket, watertight RJ45 connector (without cable).	Where **encl** is defined in the following page You must select a **PoE** adaptor. See the accessory table at page 3 You must fill in the **country** name *where* it will be installed to determine the frequency band
Loop-W8140-IANT-5150-5875-a-100-encl-country-**G**	802.11a **(5.8G Wide-Band)** 100 mW WLAN outdoor device. 5.8G Internal Antenna(Wide-Band): 15dBi Standard package includes: mounting bracket, watertight RJ45 connector (without cable).	

Loop-W8140-IANT-5825-5875-a-100-encl-country-**G**	802.11a **(5.8G Narrow-Band)** 100 mW WLAN outdoor device. 5.8G Internal Antenna(Narrow-Band): 17.5dBi Standard package includes: mounting bracket, watertight RJ45 connector (without cable).	Where **encl** is defined in the following table You must fill in the **country** name *where* it will be installed to determine the frequency band You must select a **PoE** adaptor. See the accessory table below

- Where **freq** is used to select a frequency

Frequency	**Description**	
2.4	2.412 GHz to 2.462 GHz	**Note**: Actual operating frequencies will depend on the country you select. The user is responsible to select the correct country, which will determine the authorized channels. The selection of unauthorized channels is against the law and is subject to strict penalties
5.8	5.18 GHz to 5.875 GHz	

- Where **encl** is used to select the protection rating for enclosure.

Protection Rating =	**Description**
IP67P	Weatherproof plastic enclosure with IP67 protection rating, with LED panel, no RSSI buzzer (Discontinue)
IP67A	Weatherproof plastic enclosure with IP67 protection rating, with internal RSSI buzzer included, no LED panel.

Accessories/Spare Parts Options

User's Manual		
Loop-W8140-UM	User's Manual (optional, paper copy). A CD version of the manual is already included as standard equipment.	
Power over Ethernet		
PoE Adapter		
Loop- ACC-POE-COMB-AC-DC-RJ2-**G**	Input: 100-240 Vac Output: Combined 48Vdc power and data	You must select a PoE
Loop- ACC-POE-COMB-AC-DC-3AF-**G**	Input: 100-240 Vac Output: Combined 48Vdc power and data IEEE 802.3af compliant single port injector	adaptor and the correct power cord below. ▪ CE mark ▪ 24W ▪ 0-40°C
Power Cord for PoE Adapter		
Loop-ACC-PC-USA	AC power cord for Taiwan/America	
Loop-ACC-PC-EU	AC power cord for the EU	
Loop-ACC-PC-UK	AC power cord for the UK	
Loop-ACC-PC-AUS	AC power cord for AUS	
Loop-ACC-PC-CH	AC power cord for China	

RF Cable	
Loop- ACC-CAB-RFC4-NM-010-NM-01-**G**	50 Ohm Low Loss RF Cable (1m) N(Male) - N(Male)
Loop- ACC-CAB-RFC4-NM-030-NM-01-**G**	50 Ohm Low Loss RF Cable (3m) N(Male) - N(Male)
Water-tight RJ45 Connector	
Loop-ACC-RJ45WTCON-**G**	Water-tight RJ45 connector (part of standard package)
Mounting Kits	
Hose Clamp	
Loop-ACC-HC-6	Clamp with maximum diameter 6 cm (part of standard package)
Loop-ACC-HC-30	Clamp with maximum diameter 30 cm
Mounting Bracket	
Loop-ACC-MB-L	L-Type mounting main holder and kit (part of standard package)
Loop-ACC-MB-U	U-Type screw and kit (part of standard package)
Lightning Arrestor	
Loop- ACC-LA-0-3G-NM-NF-01-**G**	Lightning Arrestor for 1.0 to 3.0 GHz (for 2.4G model only), N Female to N female.
Loop- ACC-LA-2-6G-NM-NF-01-**G**	Lightning Arrestor for 2.0 to 6.0 GHz (for 2.4G or 5.8G models), N Male to N Female Bulkhead
Radio Planning Tool	
Loop-ACC-RPT	A software tool with embedded Google Earth link to calculate the geographic ground contour profile, transmission bandwidth, throughput estimation, and Fresnel clearance

Firmware Upgrade	
Loop-W8140-FWUPGR	Firmware Upgrade. Customers who desire to have a firmware upgrade after their warranty has expired can purchase this option. This will upgrade the firmware to the most current version and provide an additional 12 months of software repair and patches on existing functionality as necessary.

Order Code Examples

Example 1(External Model):
Main Unit: Loop-W8140-EANT-2.4G-abg-100-IP67A-United States-**G**
Description: External Antenna model of W8140. Frequency default value is 2.4G, 802.11a/b/g modes available with 100mW output power and IP67 weatherproof plastic casing with internal RSSI buzzer. The country name filled by the customer is United States.
Accessories: Loop- ACC-POE-COMB-AC-DC-3AF, Loop-ACC-PC-EU
Description: A PoE adaptor with IEEE 802.3af compliant single port injector, and a power cord that is compliant to EU regulations.

Example 2(Internal Model):
Main Unit: Loop-W8140-IANT-2412-2462-bg-100-IP67A-Thailand-**G**
Description: Internal Antenna model of W8140, built in 2.4G antenna (Manufactuing Option), with 802.11 b/g modes available, 100mW output power, IP67 weatherproof plastic casing with internal RSSI buzzer, the country name filled by the customer is United States.
Accessories: Loop- ACC-POE-COMB-AC-DC-3AF, Loop-ACC-PC-China
Description: A PoE adaptor with IEEE 802.3af compliant single port injector, and a power cord that is compliant to China regulations.

Loop-W8140 General Product Specifications

Transmitter Output Power and Receiver Sensitivity

2.4G (2412 – 2462 MHz)

	100 mW		500 mW	
	1 Tx Power Max.	2 Rx Sensitivity	1 Tx Power Max.	2 Rx Sensitivity
b	20 dBm	-93 dBm	27 dBm	-96 dBm
g	20 dBm	-93 dBm	27 dBm	-90 dBm
n	18 dBm	-92 dBm		

5.8G (5180 – 5875 MHz)

	100 mW		250 mW	
	1 Tx Power Max.	2 Rx Sensitivity	1 Tx Power Max.	2 Rx Sensitivity
a	17 dBm	-91 dBm	24 dBm	-91 dBm
n	16 dBm	-91 dBm		

Ethernet Functions

Ethernet Port	10/100 Base-T (RJ-45 connector) with auto MDIX

Management Functions

Web-based management	Yes
System Load Default	Yes
System status report	Yes
Association Client List	Yes
SNMP	V1 and V2c
Auto Associate to IP with same ESSID	Yes
DHCP Client, Auto Negotiate for IP	Yes
IP address discovery software (Quick WiFi Unit IP Wizard)	Yes
Firmware can be upgraded through web-server and Telnet	Yes
Number of client associations	AP mode: 250
Number of concurrent users	AP mode: 50 Repeater mode: 30

Number of Wireless uplinks	Repeater mode: 1
Password Access control to configuration	2 Levels
Ping from Device	Through Telnet

Security and Access Control

Static WEP	Maximum 128 bits
MAC Access Control List	AP/Master only
Remote AP MAC Control	Client/Slave only
WPA, 802.1x Support	Yes
WPA-PSK, WPA2-PSK	PassPhase with TKIP and AES ciphers PEAP, EAP-TLS, EAP-TTLS, EAP-GTC
Configuration file download (Telnet)	Yes
Save last good setting	Yes
Software reset	Yes
Software factory reset	Yes
Multiple FTP Pass Through	Yes

User-assigned separate VLAN tags for data and management	Yes
Bandwidth Limiting with QoS (priority for UDP over TCP data)*	***Note:** When this feature is enabled, the data bandwidth is set, and the balance of bandwidth will be used for live data such as video and VoIP packets.
802.11e QoS (priority for Voice and Multimedia)	Yes
Wireless Client to Client Isolation	Yes
Suppress SSID	Enable, Disable, Disable with multiple clients behind CPE
Software-selectable Wireless Distribution System (WDS)	AP mode: point-to-point, WDS unavailable Master mode: point-to-multi-point, WDS-enabled

Electrical

Power Input	18-48V DC through RJ45
Power Consumption	Typical 8.5 Watts (Maximum 9 Watts)

Physical and Environmental

Dimensions	IP67P	236 mm x 67.2 mm x 236 mm (W x H x D)
	IP67A	229mm x 79mm x 229mm (W x H x D)
Net Weight	IP67P	1.0 Kg, internal antenna module only 0.8 Kg, external antenna module only
	IP67A	1.1 Kg, internal antenna module only 0.9 Kg, external antenna module only
Antenna Connectors	Two (2) 50 ohm, N-type (female)	
Power Over Ethernet (PoE)	Passive PoE, 3af compliant option	
Operating Temperature	-20°C to +60°C	
Relative Humidity when operational	15% to 90% (non-condensing)	
Relative Humidity during storage	Maximum 95% (non-condensing)	
Wind Speed Support	160 km/hr	

Standards and Compliances

IEEE Wireless Standard	802.11a/b/g & 802.11a/b/g/n
IEEE Ethernet Standard	802.3, 802.3u (CSMA/CD)
Waterproof Rating	IP67
Random Vibration	IEC-68-2-64
Shock	IEC-68-2-29
Drop	IEC-68-2-32
Salt Fog	IEC-68-2-11
Solar Radiation	IEC-68-2-5
Safety	EN 60950

EMC and RFI	FCC Part 15 C
ESD	IEC 61000-4-2
Lightning Protection at Ethernet Port	Yes
Certification	CE

a/b/g 100 mW / 250 mW / 500 mW Product Specifications

RF (Radio Frequency) Specifications

Frequency	2.4 GHz: 2412 to 2462 MHz or 5.8 GHz: 4900*/5180 to 5875 MHz (manufacture option) (* Future option)
Maximum Data Rate with Auto Fall Back	108 Mbps
Wireless Data Rate	54, 48, 36, 24, 12, 11, 9, 6, 5.5, 2, 1 Mbps, 108 Mbps for Turbo mode
Channels	▪ USA ▪ China ▪ India ▪ Taiwan ▪ European Countries ▪ Plus 200 more countries
Channel Frequency Step Size	5 MHz
Best Channel Scanning at Power up	AP Mode only
Radio Channel Select	Determined by AP
Radio Power Control (dB steps)	From 5 dBm to maximum
Transmitter Output Power	See table under General Product Specifications
Modes Supported	Access Point, Client, Bridge, Master, Remote
Nominal Antenna Port Impedance	50 ohms x 2 (for external antenna connector, if applicable)
Media Access Protocol	CSMA/CA with ACK (Carrier Sense Multi-point Access/Collision detection with Acknowledgement)
Modulation Technique	Automatically determined by internal chip: DSS, DBPSK, DQPSK, CCK, OFDMBPSK, QPSK, 16QAM, 64QAM
Maximum distance (with external antenna)	25 kilometers, point-to-point
Antenna Type	Single internal or single external antenna

MIMO a/b/g/n 100 mW Product Specifications

RF (Radio Frequency) Specifications

Frequency	2.4 GHz: 2412 to 2462 MHz or 5.8 GHz: 4900*/5180 to 5875 MHz (manufacture option) (* Future option)
Wireless Data Rate	Up to 300 Mbps
Channels Country Code Setting	▪ USA ▪ China ▪ India ▪ Taiwan ▪ European Countries ▪ Plus 200 more countries
Best Channel Scanning at Power Up	AP Mode only

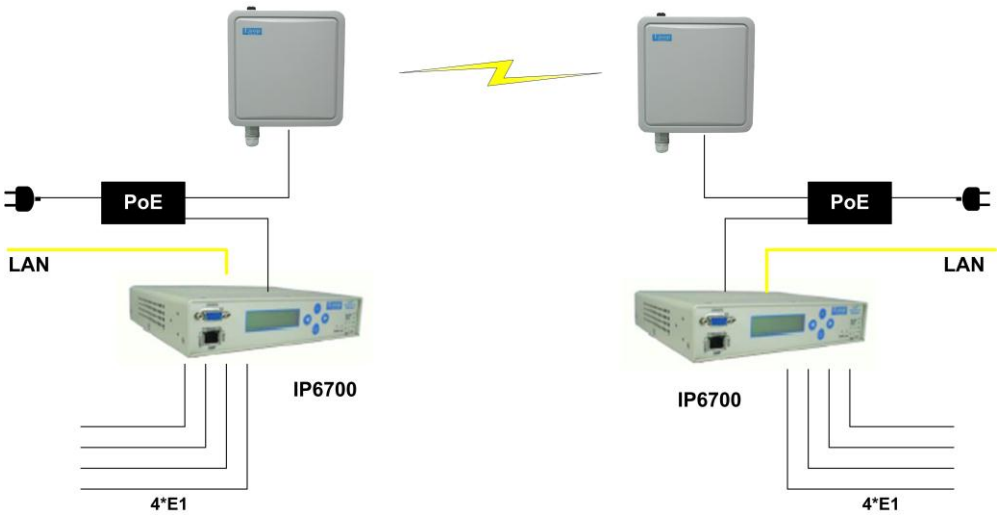
Radio Channel Select	Determined by AP
Radio Power Control (1 dB steps)	Minimum 5 dBm to maximum
Transmitter Output Power	See table under General Product Specifications
Modes Supported	Access Point, Client Bridge, Master, Remote
Nominal Antenna Port Impedance	50 ohms x 2 (for external antenna connector, if applicable)
Media Access Protocol	CSMA/CA with ACK (Carrier Sense Multi-point Access/Collision detection with Acknowledgement)
Modulation Technique	Automatically determined by internal chip: DSS, DBPSK, DQPSK,

	CCK, OFDMBPSK, QPSK, 16QAM, 64QAM
Maximum Distance (with external antenna)	25 kilometers, point-to-point
Antenna Type	Dual external antennas sold separately: 2 ports for Tx/Rx

Application Illustrations

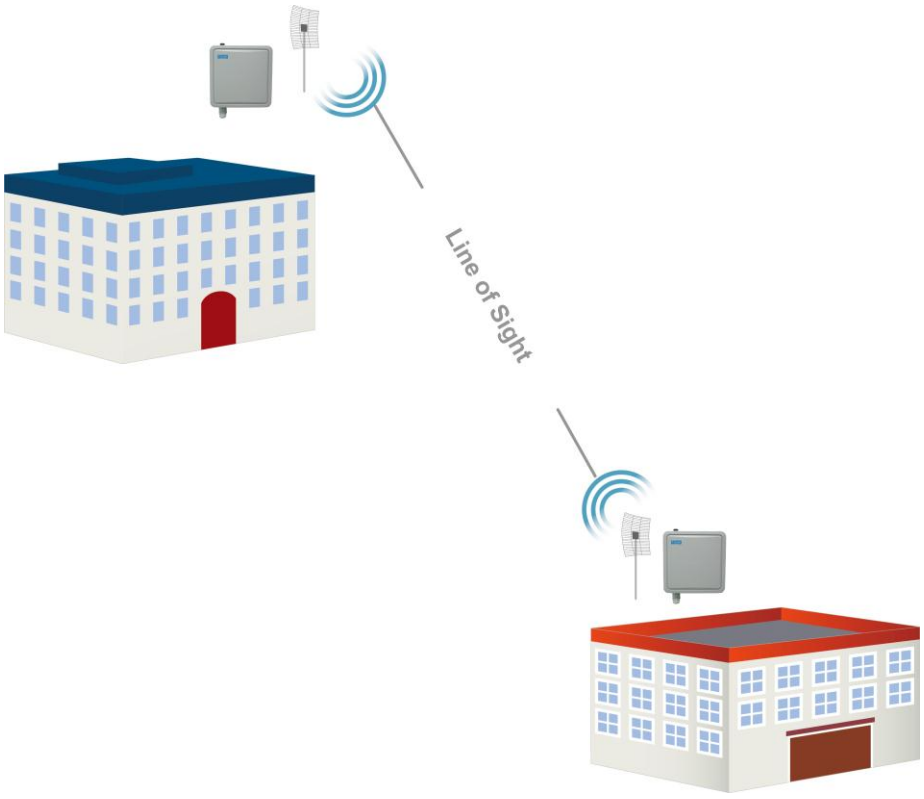
E1 Solution

Use the Loop-IP6700 TDMoEthernet to transform TDM signals into Ethernet signals and transport them over a Loop-W8140 Wireless Ethernet network.



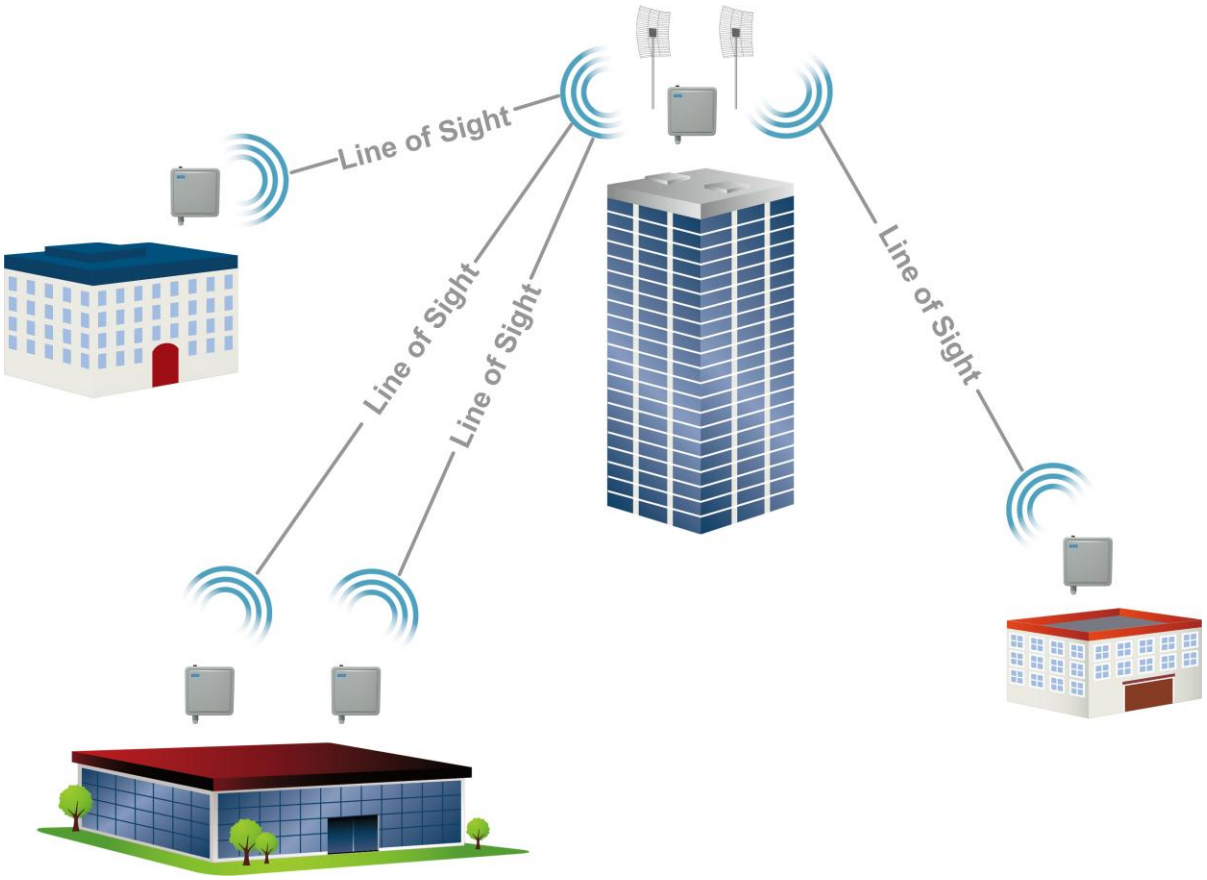
Point-to-Point Wireless Bridge

- Up to 25 kilometers for Access Point with high-gain antenna
- Up to 43 Mbps throughput for near distance
- Up to 26 Mbps throughput at 4 kilometers



Point-to-Multi-Point Wireless

- One master supports up to 50 concurrent remote units
- Distance and throughput are dependent on local environment



LoopTelecom.com

LOOP TELECOMMUNICATION INTERNATIONAL, INC.
ISO 9001/ISO 14001

Worldwide
8F, No. 8, Hsin Ann Road
Hsinchu Science Park
Hsinchu, Taiwan 30078
Tel:+886-3-578-7696
Fax:+886-3-564-6272
www.LoopTelecom.com
sales@loop.com.tw

Taipei, Taiwan
6F, No. 36, Alley 38, Lane 358
Rueiguang Road
Neihu, Taiwan 11492
Tel:+886-2-2659-0399
Fax:+886-2-2659-2325
michael_tzeng@loop.com.tw

North America
8 Carrick Road
Palm Beach Gardens
Florida 33418, U.S.A.
Tel:+1-561-627-7947
Fax:+1-561-627-6615
jimber561@aol.com

Tianjin China
No. 240 Baidi Road
Nankai District
Tianjin 300192 China
Tel:+86-22-8789-4027
Fax:+86-22-8789-0344
wym@loop-tj.com

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